

to indicate the size of the mini cell is poor transmission efficiency, in particular when the size of the user data of the cell is significantly small. For example, with a payload size of 17 octets the size of the field of fixed length would be 7 bits which translates into about 6% of the band width.

Other shortcomings related to the use of a fixed length field in the header of a mini cell relates to transmission delay. The transmission delay depends on inefficient bandwidth utilization when the mini cells are subjected to statistical multiplexing.

SUMMARY

A main object of the invention is to save band width on a link in a mobile telecommunication system.

Another object of the invention is to shorten the fixed length field and to use the bits gained in doing so either to save bandwidth or to extend the circuit identifier field, referred to as the CID field, in the header of a mini cell.

The main object of the present invention is to reduce and even eliminate the number of bits used in the header of a mini cell to indicate the size of the cell.

Another object of the invention is to indicate the length of a mini cell by using a short fixed length field using non-linear coding in order to provide a wide range of many different cell sizes.

Still another object of the invention is to provide an extension bit by which the fixed length field is extended. The extension bit is provided in the short fixed length field of the header of a mini cell.

Still another object of the invention is to indicate the length of a mini cell using an extension code provided in the short fixed length field of the header of the mini cell.

Still another object of the invention is to indicate the length of a mini cell using a short fixed length field in combination with a length extension qualifier field.

Another object of the invention is to use length extension qualifier field as an indicator of an extended header format of the mini cell.

Still another object of the invention is to indicate the length of a mini cell indirectly by associating the circuit identifier CID of an individual connection with a cell size which is selected from a group of predefined cell sizes.

Still another object of the invention is to indicate the cell size of a mini cell indirectly by associating, on a system wide basis, a circuit identifier CID with a cell size. Each cell size is associated with a respective circuit identifier CID which in turn is global in the transport network.

In a mobile telephone system that uses ATM cells in the transport network reduced bandwidth or enhanced use of the available bandwidth will make it possible to add more channels into the system.

A large number of connections, which require a larger CID field, will increase the bandwidth gain if statistical multiplexing is used.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be better understood and other characteristics thereof will emerge from the following description made with reference to the appended Figures wherein:

Figure 1 shows the format of an ATM cell transporting mini cells therein,

Figure 2 shows the header of a mini cell transported in the ATM cell in Figure 1,

Figure 3 shows an octet of the cell header of Figure 2, said octet comprising a fixed size length field for indicating the length of the mini cell,

Figure 4 shows an octet in the header of a mini cell, said octet comprising a fixed size length field linearly coded in accordance with the invention,

Figure 5 is a mapping table,

Figure 6 shows the fixed size length field and an extended fixed size length field created by the extension bit method in accordance with the invention,

Figure 7 is a mapping table,

Figure 8 shows a fixed size length field and an extended fixed size length field created with the extension code method in accordance with the invention,

Figure 9 shows the basic format of a mini cell the header of which is provided with a short fixed length field and a length extension qualifier field LEQ comprising different extension codes,

Figure 10 is a table,

Figure 11 shows the extended format of a mini cell,

Figure 12 shows the mini cell of Figure 9 in its extended format when predefined extension codes are present in the length extension qualifier field,

Figure 13 is a table,

Figure 14 shows an operation and maintenance cell,

Figure 15 is a block diagram showing a mini cell header analyzing unit used to extract, from the user data channel, the user data part of a mini cell in which the fixed size length field carries the non-linear coding in accordance with the invention,

Figure 16 shows a mini cell's header and user data as extracted from the user data channel,